CLAIMS

1. A rare earth-iron-boron based magnet comprising a crystal grain boundary layer enriched in element M (M is at least one rare earth element selected from Pr, Dy, Tb, and Ho) by diffusion of the element M from the surface of the magnet, wherein the coercive force H_{cj} and the content of the element M in the whole of the magnet satisfy the following equation:

$$H_{cj} \geq 1 + 0.2 \times M \text{ (wherein } 0.05 \leq M \leq 10)$$

wherein H_{cj} is the coercive force (unit: MA/m), and M is the content of the element M in the whole of the magnet (% by mass).

2. The rare earth-iron-boron based magnet according to claim 1, wherein the residual magnetic flux density Br and the coercive force H_{cj} satisfy the following equation:

$$Br \geq 1.68 - 0.17 \times H_{cj}$$

wherein Br is the residual magnetic flux density (unit: T).

3. The rare earth-iron-boron based magnet according to claim 1 or 2, wherein the magnet is produced by powder molding and sintering or by powder molding and hot plastic processing, and a rare earth-rich grain boundary layer is disposed between main crystals.

4. A method for producing a rare earth-iron-boron based magnet according to any one of claims 1 to 3, the method comprising physically spraying a vapor or fine particles of

element M (M is at least one rare earth element selected from Pr, Dy, Tb, and Ho) or an alloy containing the element M onto the entire surface or a portion of the surface of the magnet supported in a reduced-pressure vessel to deposit a film of the element M, and diffusing and penetrating the element M into the magnet from the surface thereof so that the element M reaches at least a depth corresponding to the radius of the crystal grains exposed at the surface of the magnet, thereby forming a crystal grain boundary layer enriched in the element M.

5. The method for producing a rare each-iron-boron based magnet according to claim 4, wherein the crystal grain boundary layer is enriched in the element M so that the concentration of the element M increases toward the surface side of the magnet.